

26. Cancelled.

*QWDP*  
*B2*

28. (Amended) The combination of claim 9 wherein the ethylene-propylene copolymer of said core layer contains ethylene in an amount within the range of about 0.05-0.8 wt. %.

**Remarks**

This application has been carefully reconsidered in view of the Office Action of February 14, 2001. In the specification, an amendment has been made on page 8 to identify the referenced application by serial number and by patent number. In addition, claims 25 and 26 have been cancelled and appropriate amendments have been made in claims 4, 5, 6, 7 and 28 in order to address the formal matters raised in paragraph 7 of the Office Action. With respect to claim 1, it is respectfully submitted that the claim as it now stands provides clear basis for ethylene in the copolymer. Specifically, it will be noted that the claim recites "---ethylene propylene copolymer having an isotactic structure and containing ethylene---" which claim language on its face refers to the ethylene content of the ethylene propylene copolymer and is readily understood as such by one skilled in the art.

The rejection of claims 1-12 and 27-30 anticipated by or in the alternative, obvious over U.S. Patent No. 5,573,723 to Peiffer et al is respectfully traversed.

Before referring specifically to the several Peiffer et al references applied in the prior art rejections, it may be helpful to briefly review Applicants' invention. The invention here involves

a multi-layer film having a heat sealable surface layer and a core layer in which enhanced inter-layer bond strength is achieved through the use of a core layer formed of an ethylene-propylene copolymer of isotactic structure. The core layer has a very low ethylene content which is effective to provide an enhanced inter-layer bond strength between the core layer and the surface layer which comprises a thermoplastic polymer and forms an effective heat seal upon heating and compression. The ethylene content of the ethylene-propylene copolymer is one weight percent or less, and as specified in Applicants' dependent claims 4-7 and 28, the ethylene content preferably is substantially less. These very low levels of ethylene surprisingly provide for substantially enhanced bonding compared to the inter-layer bonding achieved through the use of a propylene homopolymer without adversely impacting desirable physical and optical properties observed for the use of propylene homopolymers in the production of multi-layered films. Specific enhancements in inter-layer bond strength in excess of the 15% enhancement as called for in claim 1 are specified in claims 3 and 5.

The Peiffer '723 patent discloses a multi-layer film which can incorporate an ethylene-propylene copolymer, but there the similarity between Peiffer and Applicants' invention ends. Peiffer '723 discloses a film designed for use in twist wrapping and requires relatively high ethylene content in the copolymers forming the outside layers with the base layer formed of isotactic polypropylene and a low molecular weight resin. Since Peiffer is directed to a film for use in twist wrapping, it is clear that Peiffer does not disclose a heat-sealable surface layer as called for in Applicants' claims, nor is Peiffer concerned with the interlayer bond strength between the surface layer and the core layer. In fact, Peiffer is devoid of even the vaguest reference to heat sealing characteristics or inter-layer bond strength. In Peiffer, the so-called base layer can take the form of a propylene polymer and a resin such as various petroleum,

styrene, or terpene resins. The propylene polymer in Peiffer can be an ethylene/propylene copolymer which can contain up to 10% ethylene, far in excess of the very small quantities of ethylene required in the propylene ethylene copolymer used in Applicants' invention. There is no enhancement in inter-layer bond strength disclosed in Peiffer, and even if such were inherently achieved (as discussed below, Peiffer does not satisfy the requirements of inherency, as called for in the MPEP and the case law on this subject), it would be accompanied by the use of an ethylene-propylene polymer of much higher ethylene content than called for in Applicants' invention. In this regard, as noted previously, the clear teaching in Peiffer is that ethylene contents of up to 10% should be employed. In the specific examples given in Peiffer of a three-layer film, the outer layers are formed from random ethylene/propylene copolymers having an ethylene content of 4.5%. It further will be noted that there is no disclosure in Peiffer that the propylene/ethylene copolymers used there have an isotactic structure. It is only the propylene homopolymer which is identified as isotactic.

As the Examiner apparently acknowledges, the 15% enhancement in inter-layer bond strength (or 30% or 50% enhancement as called for in claims 3 and 5) is not disclosed in Peiffer. Further, it is not inherent in the reference as discussed below. To the extent the rejection would suggest that such enhancement is obvious to form a basis for the alternative rejection under 35 USC § 103, Applicants would respectfully disagree. More to the point, however, is the fact that there is absolutely nothing in the prior art which would render obvious to one of ordinary skill in the art an enhancement in inter-layer bond strengths at the very low ethylene contents called for in Applicants' claims. The enhancement in bond strength associated with the extremely low ethylene contents of the ethylene/propylene copolymers employed in Applicants' invention, becomes obvious only after a review of Applicants' specification. There clearly is nothing in the

prior art which would even remotely suggest a modification of the Peiffer teachings to arrive at Applicants' invention.

As noted above, it appears to be acknowledged in the Office Action that the heat sealable characteristic of the surface layer and enhanced interlayer bond strength at the low ethylene content called for in Applicants' invention are not found in the Peiffer et al reference. To the extent an alleged inherency of the interlayer bond strength is relied upon, Applicants would respectfully refer to the provisions of the MPEP on this subject. The requirements for a rejection based upon an alleged inherency of subject matter not disclosed in a reference is stated in MPEP §2112 as follows:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. (emphasis original.)

Section 2112 reflects the general rule that for inherency to reside, it must be shown that the alleged inherency is necessarily present and not a mere possibility. Thus, as stated by the Board in *Ex parte Keith*, 154 USPQ 321 (Bd. of App. 1966), in reversing the Examiner's rejection based upon inherency:

There are other possible courses the reaction could follow . . .  
Asserted inherency must be a necessary result and not merely a possible result.

As indicated in Section 2112, this principle was more recently followed by the Board in *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. of App. and Interf. 1990), where the Board reversed an inherency rejection, stating as follows:

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the alleged inherent characteristic necessarily flows from the teachings of the prior art (citing cases). (emphasis original)

There is, of course, no such basis in the present situation.

In summary, the prior art reference does not disclose a 15% enhancement in inter-layer bond strength for an ethylene/propylene copolymer having a maximum ethylene content of one percent, as called for in claim 1. It does not disclose that the surface layer comprises a thermoplastic polymer capable of forming an effective heat seal with a corresponding thermoplastic polymer upon heating and compression. On the contrary, one of ordinary skill in the art would assume that such heat sealable characteristics would not be desired in the Peiffer reference since it is designed to form films to be used in twist wrapping. The reference further fails to disclose ethylene-propylene copolymers of even lower ethylene content as specified in claims 4-7 and 28, nor is there any suggestion that even greater enhancement in inter-layer bond strength can be achieved as specified in claims 3 and 5.

In regard to the Examiner's arguments that the shortfalls in the Peiffer reference can be accommodated through optimization using routine experimentation to provide the desired film properties, Applicants respectfully would submit that this becomes possible only after a reading of Applicants' own disclosure. It is clear that here the proposed modifications of the Peiffer reference would require much more than the mere optimization of a result-effective variable through routine experimentation. In this respect, the Examiner's attention is respectfully invited to MPEP section 2144.05 (b):

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of optimum or workable ranges of said variable might be characterized as routine experimentation.

As noted above, the Peiffer reference is concerned with films suitable for twist wrapping, and factors such as surface layer heat sealability and interlayer bond strength are not in issue.

There is nothing in the Peiffer disclosure which would lead one of ordinary skill in the art to attempt to regulate the heat sealability or the interlayer bond strength of the Peiffer films.

The rejection of claims 1-12 and 27-30 is anticipated by, or in the alternative, obvious over U.S. Patent No. 5,716,570 to Peiffer is respectfully traversed. This patent, like Peiffer '723 is not at all concerned with multi-layer films having a heat sealable surface layer and a core layer of an ethylene-propylene copolymer of the recited low ethylene content to arrive at enhanced interlayer bond strength. In fact, in Peiffer '570, as in Peiffer '723, heat sealability of the surface layer or interlayer bond strength is not even mentioned. The Peiffer '570 patent simply contains no disclosure at all regarding interlayer bond strength, and there is nothing in Peiffer '570 to suggest that the enhancement of interlayer bond strength, as set forth in independent claim 1 or the greater enhancements as set forth in dependent claims 3 and 5, are inherently found in Peiffer '570. The propylene polymers B in Peiffer '570 are not disclosed as formed of an ethylene-propylene copolymer having an isotactic structure and an ethylene content of no more than 1 wt.%. Here, the various copolymers include copolymers with up to 10% ethylene or C<sub>4</sub>-C<sub>6</sub> olefins as well as terpolymers of propylene, ethylene, and butylene with an ethylene content of 10 wt.% and a butylene content of up to 15 wt.%. As to the Examiner's argument with respect to Peiffer '570 regarding optimization through routine experimentation, here, as in Peiffer '723, optimization through "routine experimentation" becomes possible only after reading applicants' disclosure. Peiffer is concerned with co-extrusion of different polymers to produce thickened edge regions which are then cut off to form products such as electrical insulation tapes. Obviously, heat sealing characteristics and interlayer bond strengths are simply not at issue in the products produced by the Peiffer '570 patent.

The rejection of claims 1-12 and 27-30 as anticipated by or obvious in view of Patent No. 6,063,482 to Peiffer et al is respectfully traversed. Peiffer '482, as with the two references discussed above, contains absolutely no disclosure regarding enhancement of interlayer bond strength in a multilayer film comprising a surface film capable of forming an effective heat seal as called for in applicants' independent claim 1. As is the case with the two Peiffer references discussed previously, this reference is totally devoid of any disclosure or description regarding heat sealing characteristics or interlayer bond strengths. Peiffer '482 is concerned with forming a biaxially oriented polypropylene film having improved tear propagation resistance. While multi-layer films can be involved, the preferred product in '482 is single-ply films. As in Peiffer '570 and Peiffer '482 is concerned with products, such as electrical insulation tapes, in which heat sealing is not an issue.

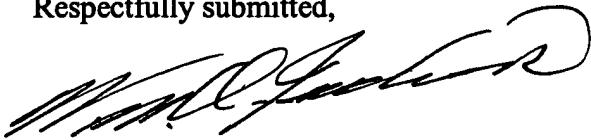
As noted above, Peiffer '482 discloses single ply films, *i.e.* films having only a base layer, and multi-ply films, films having a base ply and one or more top plies, with the former being preferred. However, where multilayer films are involved in Peiffer '482, the disclosure is that the base play is an isotactic propylene homopolymer (see Example 5) with the use of random ethylene/propylene copolymers being confined to the top plies. Even here, the ethylene content in the top ply (4.5 wt.%) is well above the 1% maximum called for in applicants' claims. In any event, there is, as noted above, absolutely no disclosure in Peiffer '482 of a surface layer effective in forming an effective heat seal with a core layer providing an enhanced interlayer bond strength with the surface layer. The features called for in applicants' claims are not inherent in Peiffer '482 nor can obviousness be established through so-called optimization of a result-effective parameter by routine experimentation.

For the reasons advanced above, it is respectfully submitted that applicants' claims are in full compliance with the requirements of 35 U.S.C. § 112 and are patentable over the prior art. Since claims 25 and 26 have been cancelled, the double-patenting rejection is no longer an issue. Accordingly, an early reconsideration and allowance of this application is respectfully requested.

Enclosed is a check in the amount of \$110.00 to cover the fee for a one-month extension for response to the February 14, 2001, Office Action. The response was due May 14, 2001, but with this extension, the response is now due June 14, 2001.

The Commissioner is hereby authorized to charge any further fees connected with this Amendment which may be due or to credit any overpayment to our Deposit Account No. 12-1781.

Respectfully submitted,



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1223-74058  
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Attachment to Response (Amendment) to February 14, 2001, Office Action:

In the Specification

Pages 7-8

The present invention addresses the use of a propylene-ethylene mini-random copolymer with an amount of ethylene no more than about 1 percent. The preferred method involves polymerization of the ethylene and propylene in the presence of an isospecific catalyst as known in the art. The resulting polymer incorporates the ethylene within the isotactic structure and pattern of the propylene. Alternative uses could incorporate the ethylene in an isotactic/syndiotactic polypropylene blend such as that disclosed in U.S. Patent Application No. Serial No. 08/954,325, filed October 17, 1997, now U.S. Patent No. 5,958,566 to Wheat et al. (entitled Improved Metal Bond Strength in Polypropylene Films, with the same inventive entity as the present application, filed contemporaneously with the present application,] the entire disclosure of which is incorporated herein by reference), while maintaining many of the advantages of the proposed invention.

In the Claims

1. (Amended) The combination of claim 1, wherein said [core layer formed of] ethylene-propylene copolymer contains ethylene in an amount between about 0.05 weight percent and about 0.8 weight percent.

2. (Amended) The combination of claim 1, wherein [said core layer formed of] ethylene-propylene copolymer contains ethylene in an amount between about 0.3 weight percent and about 0.5 weight percent and wherein said inter-layer bond strength between said surface layer and said core layer is at least about 30 percent greater than the inter-layer bond strength between said surface layer and a film formed of isotactic polypropylene homopolymer.

3. (Amended) The combination of claim 1, wherein said [core layer formed of] ethylene-propylene copolymer contains ethylene in an amount between about 0.1 weight percent and about 0.2 weight percent.

25. Cancel.

26. Cancel.

28. (Amended) The [method] combination of claim 9 wherein the ethylene-propylene copolymer of said core layer contains ethylene in an amount within the range of about 0.05-0.8 wt. %.